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EXAMINER

FEELY, MICHAEL J

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 10 24 2002

4

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/963,554

Examiner

Michael J Feely

Applicant(s)

NAKAMURA ET AL

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☒ Claim(s) 1-13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claims 2 and 4-6 are objected to because of the following informalities: claims 2 and 4-6 provide limitations for the alternate components (D-1) and (D-2); however, the claim language fails indicate whether or not these components are present in the composition. The language "when present" should be inserted in the claim language when components (D-1) and (D-2) are further limited. Appropriate correction is required.
2. Claims 12 and 13 are objected to because of the following informalities: claims 12 and 13 are missing a period at the end of the claim. Appropriate correction is required.
3. Claims 1-13 are objected to because of the following informalities:
  - a) claim 1, section (A), reads "an organopolysiloxane having two alkenyl groups with 4 or less carbon atoms bonded to silicon atom in one molecule". This concept would be more clearly defined by --an organopolysiloxane having two alkenyl groups per molecule and a molecular weight of 1,000 or more, wherein said alkenyl groups contain 1-4 carbon atoms, and wherein said alkenyl groups are directly bonded to silicon atoms--.
  - b) claim 1, section (B), reads "an organohydrogenpolysiloxane having at least two hydrogen atoms boned to silicone atom in one molecule". This concept would be more clearly defined by --an organohydrogenpolysiloxane having at least two Si-H bonds per molecule and a molecular weight of 1,000 or more--.
  - c) claim 1, section (D), reads "at least one selected from the group consisting of an organosilicon compound (D-1) having at least three alkenyl groups with 4 or less carbon atoms bonded to silicon atom in one molecule and a molecular weight of less than 1,000 and an organic

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cyclic silicon compound (D-2) having at least three hydrogen atoms bonded to silicon atom in one molecule and a molecular weight of less than 1,200.” This concept would be more clearly defined by – at least one selected from the group consisting of an organosilicon compound (D-1) having at least three alkenyl groups per molecule and a molecular weight of less than 1,000, wherein said alkenyl groups contain 1-4 carbon atoms, and wherein said alkenyl groups are directly bonded to silicon atoms; and an organosilicon compound (D-2) having at least three Si-H bonds per molecule and a molecular weight of less than 1,200.–

### ***Drawings***

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: reference number 10 in Figure 5. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-13 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 1-13 require a specific molecular weight range for the organopolysiloxane (A)

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and the organohydrogenpolysiloxane (B); however, Applicant fails to indicate if this molecular weight is based on a number-average molecular weight or a weight-average molecular weight.

***Specification***

7. The following is a quotation of the first paragraph of 35 USC §112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of 37 CFR §1.71(a):

(a) The specification must include a written description of the invention or discovery and of the manner and process of making and using the same, and is required to be in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which the invention or discovery appertains, or with which it is most nearly connected, to make and use the same.

The specification is objected to under 37 CFR §1.71 because: the Specification fails to indicate if the molecular weights of components (A) and (B) are based on a number-average molecular weight or a weight-average molecular weight.

***Claim Rejections - 35 USC § 102/103***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(c) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-7 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fehn et al. (US Pat. No. 6,187,890).

Regarding claim 1, Fehn et al. disclose an adhesive composition (column 2, lines 44-55) comprising the following components: (A) an organopolysiloxane having two alkenyl groups per molecule (column 4, lines 12-29; column 5, lines 32-38) and a molecular weight of 1,000 or more (column 5, lines 39-68), wherein said alkenyl groups contain 1-4 carbon atoms, and wherein said alkenyl groups are directly bonded to silicon atoms (column 4, lines 12-29; column 5, lines 32-38); (B) an organohydrogenpolysiloxane having at least two Si-H bonds per molecule (column 6, lines 1-14) and a *number average* molecular weight of 1,000 or more (column 6, lines 19-49); and (C) a platinum-based catalyst (column 7, lines 17-24).

Regarding component (D), the claim language discloses two alternate embodiments: (D-1) and (D-2).

Fehn et al. discloses an organosilicon compound (D-1) having at least three alkenyl groups per molecule and a molecular weight of less than 1,000, wherein said alkenyl groups contain 1-4 carbon atoms, and wherein said alkenyl groups are directly bonded to silicon atoms (column 9, lines 43-54). Therefore, Fehn et al. anticipates the first embodiment of the invention.

Regarding the second embodiment, Fehn et al. do not explicitly teach the use of an organosilicon compound (D-2) having at least three Si-H bonds per molecule and a molecular weight of less than 1,200, in combination with components (A), (B), and (C). Fehn et al. disclose, "Of course, it is also possible to use mixtures of different siloxanes which satisfy the

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criteria of constituent (B). In particular, the molecules forming constituent (B) can also contain aliphatically unsaturated groups in addition to the obligatory SiH groups. Particular preference is given to using low molecular weight SiH-functional compounds such as tetrakis(dimethylsiloxy)silane and tetramethylcyclotetrasiloxane, and also high molecular weight, SiH-containing siloxanes such as poly(hydrogenmethyl)siloxane and poly(dimethylhydrogenmethyl)siloxane having a viscosity at 25° C. of from 10 to 10,000 mPa s, or analogous SiH-containing compounds in which some of the methyl groups are replaced by 3,3,3-trifluoropropyl or phenyl groups." (column 6, 35-49). Although not explicitly disclosed, these combinations would be capable of satisfying the requirements of both components (B) and (D-2) of the instant invention. Therefore, the second embodiment of the instant invention would have been obvious in light of the combination of SiH-functional siloxanes taught by Fehn et al.

Therefore, if not explicitly taught in the reference, then the teachings would have been obvious to one of ordinary skill in the art at the time of the invention.

Regarding claims 2-6, Fehn et al. disclose the adhesive composition of claim 1, wherein (2) the number of hydrogen atoms contained in the component (B) and the component (D-2) is 0.4 to 6.0 times the total number of alkenyl groups contained in the component (A) and alkenyl groups contained in the component (D-1) (column 6, lines 50-54), the component (C) is contained in an amount of 10 to 1,000 ppm based on the total weight of the components (A), (B) and (D) (column 9, lines 4-12), and the component (D) is contained in an amount of 0.1 to 40 wt% based on the total weight of the components (A) and (B) (column 9, lines 65-67); wherein (3) the component (D) is an oligomer having 3 to 8 silicon atoms (column 9, lines 50-54); wherein (4) the component (D-1) is selected from the group consisting of

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boronvinyl dimethylsiloxane, hexavinyl disiloxane, methacryloxypropyltris(vinyl dimethylsiloxysilane, octavinyl-T8-silsesquioxane, pentavinylpentamethylcyclopentasiloxane, tetraallyloxysilane, tetraallylsilane, tetrakis(2-methacryloxyethoxy)silane, tetrakis(vinyl dimethylsiloxysilane, 1,1,3,3-tetravinyl dimethyldisiloxane, tetravinylsilane, 1,3,5,7-tetravinyl-1,3,5,7-tetramethylcyclotetrasilazane, 1,3,5,7-tetravinyl-1,3,5,7-tetramethylcyclotetrasiloxane, tris(vinyl dimethylsiloxysilane, tris(vinyl dimethylsiloxysilane, trivinylchlorosilane, trivinylethoxysilane, trivinylmethoxysilane, trivinylmethylsilane, 1,3,5-trivinyl-1,1,3,5,5-pentamethyltrisiloxane, trivinylsilane, 1,3,5-trivinyl-1,3,5-trimethylcyclotrisilazane and 1,3,5-trivinyl-1,3,5-trimethylcyclotrisiloxane (column 9, lines 43-54); wherein **(5)** the component (D-2) is selected from the group consisting of hydro-T8-silsesquioxane, octakis(dimethylsiloxysilane)-T8-silsesquioxane, methylhydrocyclosiloxane, pentamethylcyclopentasiloxane, phenylhydrocyclosiloxane, 1,3,5,7-tetramethylcyclotetrasiloxane, 1,3,5,7-tetraethylcyclotetrasiloxane and 1,3,5,7-tetraethyl-2,4,6,8-tetramethylcyclotetrasilazane (column 6, lines 35-49); and wherein **(6)** the component (D-1) is 1,3,5-trivinyl-1,3,5-trimethylcyclotrisiloxane or 1,3,5,7-tetravinyl-1,3,5,7-tetramethylcyclotetrasiloxane (column 9, lines 50-54) and the component (D-2) is 1,3,5,7-tetraethylcyclotetrasiloxane or 1,3,5,7-tetramethylcyclotetrasiloxane (column 6, lines 35-49).

Regarding claim 7, Fehn et al. do not explicitly disclose that component (A) has a (kinematic) viscosity of 100 to 250,000 cS at 25°C. Fehn et al. disclose a dynamic viscosity of from 0.1 to 100,000 Pa s at 25°C (column 5, lines 59-63) and a number average molecular weight between  $10^2$  and  $10^6$  g/mol. Based on the molecular weight and dynamic viscosity of the



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alkenyl-functional organopolysiloxane, the kinematic viscosity would have inherently fallen within the range of 100 to 250,000 cS at 25°C.

Therefore, if not explicitly taught in the reference, then the teachings would have been obvious to one of ordinary skill in the art at the time of the invention.

***Claim Rejections - 35 USC § 103***

11. Claims 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fehn et al. (US Pat. No. 6,187,890) in view of Suzuki et al. (EP 0195355).

Regarding claims 8-13, Fehn et al. disclose the composition of claim 1; however, they fail to teach the use of the composition as an adhesive for optical devices.

Suzuki et al. teach a composition comprising: an organopolysiloxane containing at least two lower alkenyl radicals in each molecule, having a weight average molecular weight greater than 1,000 (page 3, line 10 through page 4, line 29) – corresponding to component A of the instant invention; an organohydrogenpolysiloxane, having an unrestricted molecular weight (page 4, line 30 through page 6, line 10) – corresponding to component B of the instant invention; a platinum catalyst (page 6, lines 11-27) – corresponding to component C of the instant invention; and a vinyl-substituted cyclic polysiloxane, used as a curing retarder (page 6, lines 28-36) – corresponding to component D of the instant invention. This composition is used as a “refractive-index-coupler” for optical communication fiber joints, wherein it is filled into the joint gap and crosslinked (page 6, line 36 through page 7, line 5).

With the exception of the molecular weights of the organohydrogenpolysiloxane and the vinyl-substituted cyclic polysiloxane, the composition of Suzuki et al. corresponds to the composition of the instant invention and the composition of Fehn et al. Therefore, in light of the

teachings of Suzuki et al., it would have been obvious to have used the composition of Fehn et al. as an adhesive for optical articles.

This would include (8) an optical device constructed by bonding optical parts by the adhesive composition of claim 1; wherein (9) the optical parts are optical fibers, lenses, filters, optical waveguides, diffraction gratings or optically active elements; and wherein (10) wherein the optical parts are made from glass, plastics, metals or organic-inorganic composite materials. This would also include (11) an optical device constructed by bonding at least two optically transparent optical parts by an optically transparent adhesive layer formed by curing the adhesive composition of claim 1, wherein the value of refractive index of the adhesive layer was adjusted to approximate to the values of refractive index of the at least two optically transparent optical parts. All of these embodiments are covered by the disclosure of Suzuki et al.

Regarding claims 12 and 13, neither reference discloses the refractive index relationship between the substrates and the adhesive; however, this relationship is strongly dictated by refractive index of the adhesive material. Where Fehn et al. have anticipated the composition of claim 1, the refractive index property of the composition would have been an inherent feature of the composition; hence, the refractive index relationships set forth in claims 12 and 13 would have been obvious.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used the composition of Fehn et al. as an adhesive for bonding optical articles because Suzuki et al. teach an analogous composition that is used as a refractive-index-coupler for optical communication fiber joints.

***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tsuji et al. (US Pat. No. 6,285,513) teach an optical element that comprises a silicon based resin derived from components (A), (B), and (C) of the instant invention; however, they fail to teach or suggest component (D).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J Feely whose telephone number is 703-305-0268. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on 703-308-2340. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Michael J. Feely  
October 17, 2002



Robert A. Dawson  
Patent Examiner  
703-308-2340